

03. **POVs, HMWs, Solutions, & Experience Prototypes**

Team Mango

Homeschool Education



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We conducted
needfinding interviews
with 9 individuals:

- 4 homeschooling parents
- 4 homeschooled individuals
- 1 academic expert in technology and education



Point Of Views

POV 1

We met...

a current Master's student who was homeschooled from 2nd to 9th grade for the purpose of pursuing competitive tennis.

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It would be game-changing to...

create a feedback platform to mediate between homeschooling parents and their children

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It would be game-changing to...

have a method to determine how much agency to give students in their education and how much hands-on guidance and instruction they need

POV 3

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It would be game-changing to...

empower parents to be able to have the flexibility and time to work while homeschooling.

How Might We's

Finding New Curriculum Opportunities

HMW provide students with opportunities outside what their parents might want or know?

Bidirectional Learning (Parent Learning)

HMW make teaching/learning
more two-directional (not just
teacher -> student)?

Navigating Student Autonomy

HMW guide homeschooling parents in knowing how much agency to give kids vs. how much to actively teach?

Experience Prototypes

EP 1: Curriculum Exploration

Assumption

Parents have areas that are outside of their own expertise and want help coming up with hands-on learning experiences for these topics.

Overview

- Parent will be presented with three ChatGPT-generated lesson plans on three different subjects – music, science, art.
- Parent will read over lesson plans and then select the one they would most likely use to teach their kids
- Spend time understanding the rationale behind their choice

Metadata

- **Participant:** Mother of 4, homeschooling her 2 eldest daughters
- **Timing:** 15 minutes
- **Execution:**
 - Parent will be presented with three ChatGPT-generated lesson plans on three different subjects
 - Parent will read over lesson plans and then select the one they would most likely use to teach their kids
 - Spend time understanding the rationale behind their choice

>Title: Exploring Colors with Fruit Prints

Objective:

To introduce students to the concept of colors and color mixing while creating a fun art project using fruit.

Materials:

- Assorted fruits (such as apples, oranges, lemons, limes, or pears)
- Knife (for adult use only)
- Paper towels
- Paintbrushes
- Paint (red, yellow, blue, and white)
- Paper plates
- White paper

Procedure:

Begin by introducing the students to the concept of colors and color mixing. Talk about primary colors (red, yellow, and blue) and how they can be mixed together to create secondary colors (orange, green, and purple).

Cut the fruits into halves or quarters, depending on their size. Use paper towels to blot the excess juice from each fruit.

Pour a small amount of each paint color onto separate paper plates. Encourage the students to experiment with mixing the colors together to create new colors.

Using a paintbrush, have the students paint the fruit halves or quarters with their chosen paint colors.

Once the fruit is painted, they can use the fruit as stamps to create prints on their white paper. Encourage the students to experiment with different fruit combinations and color mixtures to create unique designs.

After the prints are complete, have a class discussion about the different colors that the students used and how they mixed together to create new colors. Ask the students to identify which primary colors they used, and what new colors they were able to create.

Finally, have the students display their fruit print artwork for all to see!

Assessment:

- To assess student learning, ask them to write or draw about what they learned from the activity. Ask them to describe what happened when they mixed different paint colors together, and how the colors mixed to create new colors.

- You could also have them identify which primary colors they used, and what new colors they were able to create.

Extensions:

- Have the students try using different types of fruits or vegetables to create prints, and observe how the shapes and textures of the fruits affect the prints.
- Encourage the students to experiment with using different painting techniques, such as blending or layering colors, to create more complex designs.
- Ask the students to research different artists who use bright colors in their artwork, and report back to the class with their findings.

Redux

- Picked science experiment - that's a **gap in her own curriculum and experience**
- Gap from both child and parents' perspective – a topic that the parent lacks experience in, and a topic that the child would then be **lacking in later in education and life.**
- Validates assumption: the parent had and did realize gaps in their curriculum, and **wanted some tool to help**
- Would like something that fit an annual plan



“It’s kind of a gap for us - we don’t do any science experiments because I don’t make the time for it. Science experiments are definitely something that I’m not doing at all, and this is simple and fun.” – EP1



EP 2: Bi-directional Learning

Assumption

Homeschooling parents, especially those without a formal background in education, don't know how best to give feedback on their kids' academic work and are receptive to receiving constructive advice on their own feedback

Overview

- Have a parent give feedback on sample student responses to questions. Use ChatGPT to give them constructive feedback on the feedback the parent gives on the sample solution.

Metadata

- **Participant:** Mother of 4, homeschooling her 2 eldest daughters
- **Timing:** 30-40 min
- **Execution:**
 - Create sample student answers to questions which the parent will give feedback. (Math, English, Science)
 - Present parent with “student answer”
 - Use ChatGPT voice input Chrome extension and have parent give their feedback
 - Have ChatGPT respond to their feedback

Chat logs:

Pizza math

Input: A homeschooled student is given the question, " A pizza restaurant sells a large pizza for \$12. If Maria and her family ordered 2 large pizzas and a small salad for \$6, how much did they spend in total??"

Their answer is, "The cost of two pizzas is \$14 because $12 + 2 = 14$. The total cost is \$20 because $14 + 6 = 20$."

The parent's response is, "How many large pieces did Maria order? So they're each \$12 so you need to put two 12s together to get it the cost of both pizzas. So what's $12 + 12$? 24. okay great job! So now we need to add on the cost for the salad. $24 + 6 = 30$. Good job so we add cost of two pizzas together and then we add on the cost of the salad."

Can you please give constructive feedback on the parent's response? Focus on areas of potential improvement in helping the student.

Output: The parent's response is generally correct, but there are some areas where it could be improved to help the student better understand the math involved.

1. Instead of just asking the student how many large pizzas Maria ordered, the parent could have asked the student to calculate the total cost of the pizzas first. This would have reinforced the concept that the cost of each pizza is \$12, and that the cost of two pizzas is \$24.
2. The parent could have explained why the student needs to add the cost of the two pizzas together, instead of just telling them to do it. This would have helped the student understand the logic behind the calculation.
3. The parent could have asked the student to explain their reasoning for arriving at the answer of \$20, and then corrected any errors in their thinking. This would have helped the student learn from their mistakes and develop their problem-solving skills.
4. Finally, the parent could have asked the student to check their answer to make sure it makes sense. For example, they could have asked the student if it seems reasonable that Maria and her family would spend \$30 on two pizzas and a small salad. This would have encouraged the student to think critically about their answer and catch any errors they might have made.

Redux

- Performed **better on quantitative** subjects like math, vs something qualitative like language arts
- Gave insights that she wasn't sure about herself and **different ways of thinking** she would not be able to convey to her child otherwise.
- Homeschooled children only get **one type** of teaching and mindset, vs multiple types from different teachers over the years
- Could also help with lesson planning + teaching



"In the moment, my default is to just repeat myself. If you can pause for a minute, and figure out *why* she said 20 and talk about it... It's a good reminder." – EP3



EP 2: Navigating Autonomy

Assumption

Children will be susceptible to external influences and guidance in their learning.

Overview

- Give a student a specific, niche topic to learn about
- Give them access to ChatGPT and tell them to learn everything they can about the topic in (5-10) min
- Quiz them or have them memory dump on the topic afterwards

Metadata

- **Participant:** Homeschooled student (8th grade) with no/little prior interaction with ChatGPT
- **Timing:** 30-45 mins
- **Execution:**
 - Select specific topics for student to learn depending on age
 - Pointillism
 - Have a quiz about the topic / have a couple questions to ask in order to test their learning
 - Make sure student shared screen so we can see what they search
 - Think aloud

QUIZ

1. Who are the two artists primarily associated with the development of pointillism?
A) Claude Monet and Vincent van Gogh
B) Georges Seurat and Paul Signac
C) Pablo Picasso and Henri Matisse
D) Gustav Klimt and Egon Schiele
2. What is the main technique used in pointillist paintings?
A) Brushstrokes
B) Pencil lines
C) Small dots of pure color
D) Splatters
3. What scientific principle is the technique of pointillism based on?
A) Gravity
B) Perspective
C) Color theory
D) Composition
4. What is the purpose of using small dots of pure color in pointillist paintings?
A) To create a sense of movement
B) To create a sense of depth
C) To create a sense of texture
D) All of the above
5. What is the term used to describe the larger movement that pointillism was part of?
A) Neo-Expressionism
B) Neo-Impressionism
C) Post-Impressionism
D) Surrealism
6. What is the name of Georges Seurat's most famous pointillist painting?
A) Starry Night

Redux

- **Disconnect** between the kinds of questions the student asked about the topic vs how to effectively and holistically learn about the topic
- GPT in its current format is **too dependent** on user input – children themselves aren't able to effectively utilize prompt engineering to get the most out of it and get what they need.
- Difficult to self-drive learning when **you don't know what you don't know.**
- Student wanted some form of guidance.



“The way I was asking ChatGPT questions was how I would ask them to a human. It was different than how I would google something.” – EP3



Questions?



Whoa!

It could be the part of the presentation
where you can introduce yourself, write
your email...



01

Introduction

Here you could
describe the topic of
the section

02

Presentation

Here you could
describe the topic of
the section

03

Analysis

Here you could
describe the topic of
the section

04

Conclusion

Here you could
describe the topic of
the section



01. This Is a Great Headline

You could enter a subtitle here if you need it



The Slide Title Goes Here!

Do you know what helps you make your point clear?

Lists like this one:

- They're simple
- You can organize your ideas clearly
- You'll never forget to buy milk!

And the most important thing: the audience won't miss the point of your presentation



Maybe You Need to Divide Your Text



Mercury

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than our Moon

Venus

Venus has a beautiful name and is the second planet from the Sun. It's terribly hot—even hotter than Mercury

A Picture Always Reinforces the Concept

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A blurred black and white photograph of a modern building with large glass windows and a paved area in the foreground where people are walking.

Awesome words





02. Name of This Section

You could enter a subtitle here if you need it

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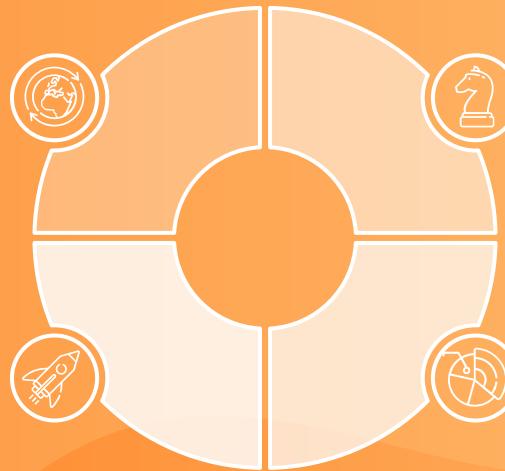
Reinforce the Concept Using Infographics!

Mars

Despite being red, Mars is actually a cold place. It's full of iron oxide dust

Jupiter

It's a gas giant and the fourth-brightest object in the night sky



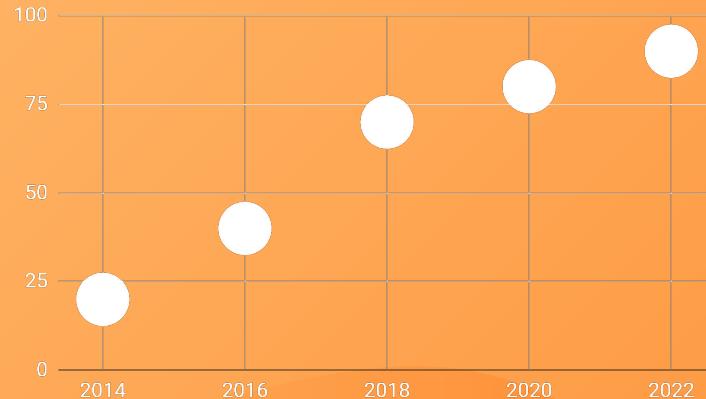
Venus

Venus has a beautiful name and is the second planet from the Sun

Mercury

Mercury is the closest planet to the Sun and the smallest in our Solar System

If You Want to Modify This Graph, Click on It, Follow the Link, Change the Data and Replace It



Despite being red, Mars is actually a cold place. It's full of iron oxide dust



... And the Same Goes for Tables

| 1 | 2 | 3 |
|---------|---------|---------|
| Quarter | Quarter | Quarter |
| 300,000 | 400,000 | 500,000 |
| 56 | 23 | 10 |

• • • •

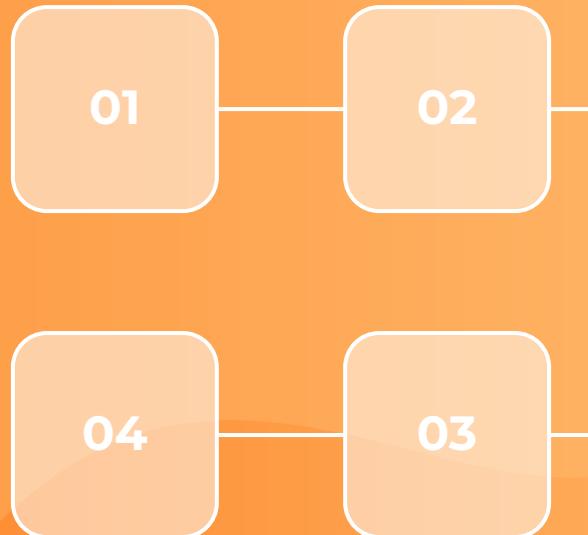
This Is a Map



Mercury is the closest planet to the Sun and the smallest one in our Solar System

A Timeline Always Works Well

Despite being red,
Mars is actually a
cold place



Jupiter is the biggest
planet in our Solar
System

Venus has a
beautiful name, but
it's terribly hot

Saturn is composed
mostly of hydrogen
and helium

03. Name of This Section

You could enter a subtitle here if you need it



This Is Another Timeline



Despite being red, Mars is a cold place



Venus has a beautiful name, but it's too hot



Mercury is the closest planet to the Sun

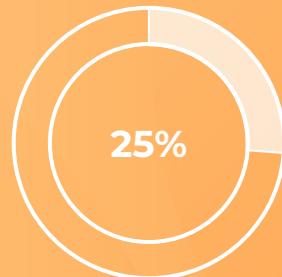


Neptune is the farthest planet from the Sun



How about the Percentages?

Mars



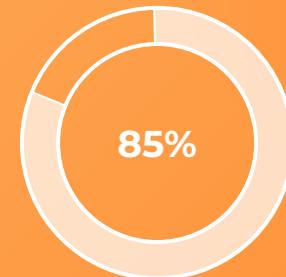
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Venus



Venus is the second
planet from the Sun

Mercury



Mercury is the closest
planet to the Sun

Do You Prefer These Other Percentages?

90%



Mars

Despite being red, Mars is actually a cold place

55%



Mercury

Mercury is the closest planet to the Sun



4,498,300,000

Big numbers catch your audience's attention





333,000.00

earths is the Sun's mass

24h 37m 23s

is Jupiter's rotation period

386,000 km

is the distance between the Earth and the
Moon





A Picture Is
Worth a
Thousand
Words



Desktop Software

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than our Moon



Tablet App

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than our Moon



Mobile Web

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than our Moon



Our Team



Jenna Smith

Here you could talk a bit about this person and provide a short bio



John Doe

Here you could talk a bit about this person and provide a short bio



Helena Doe

Here you could talk a bit about this person and provide a short bio

Thanks!



Do you have any questions?

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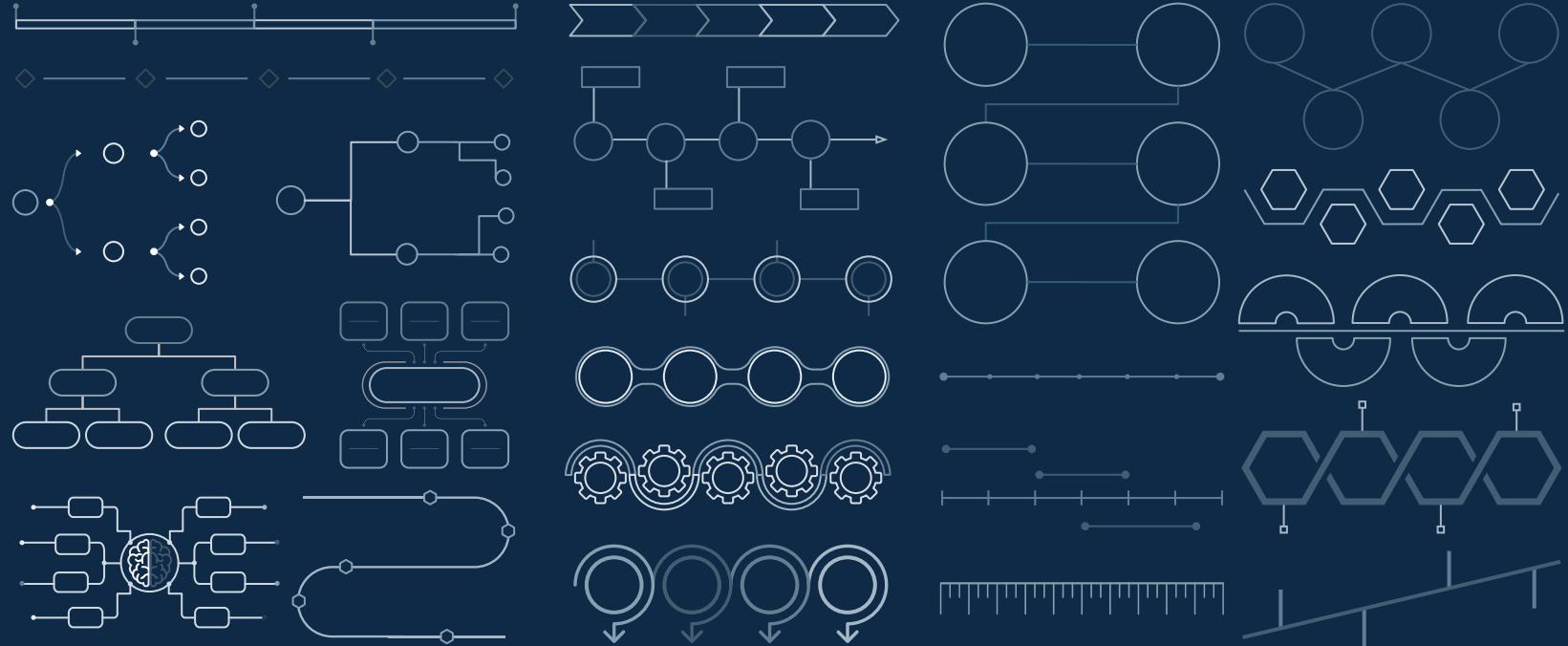
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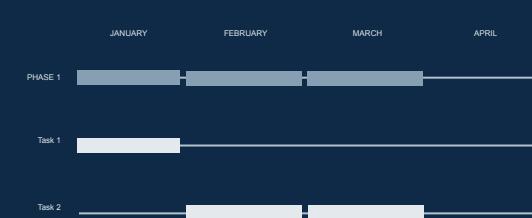
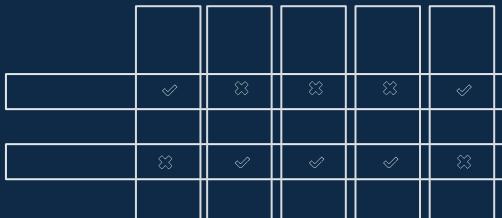
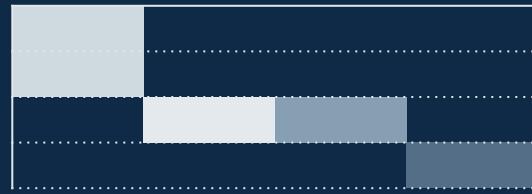
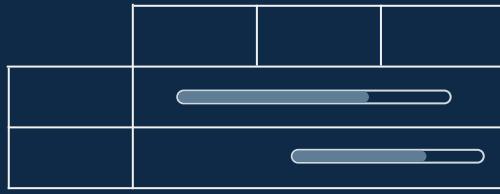
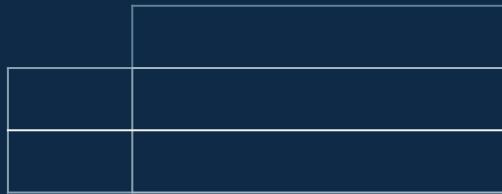
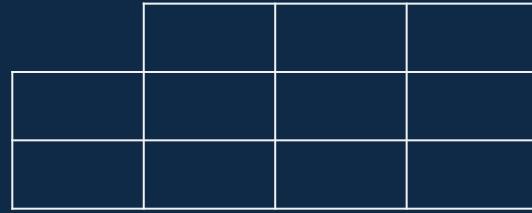
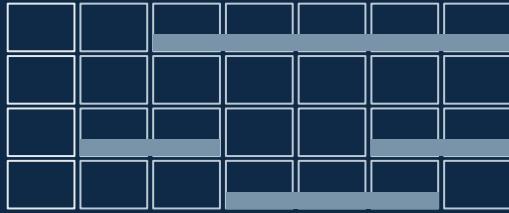
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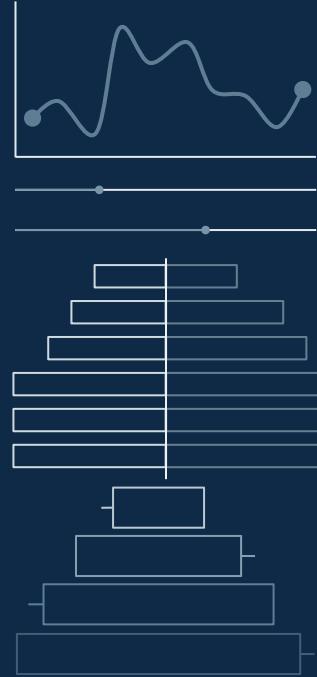
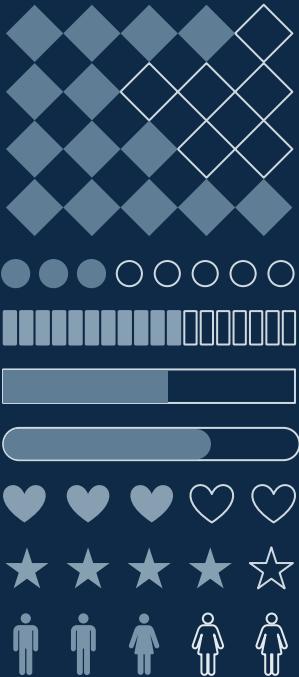
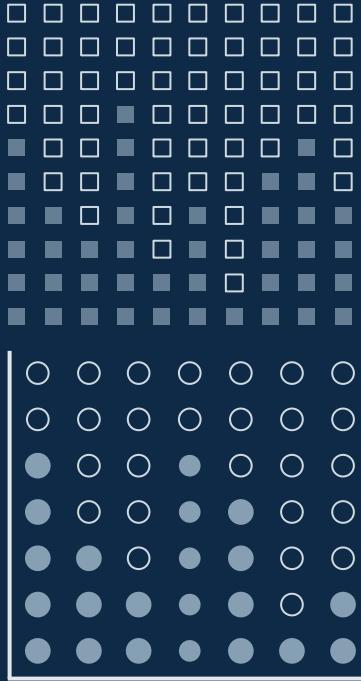












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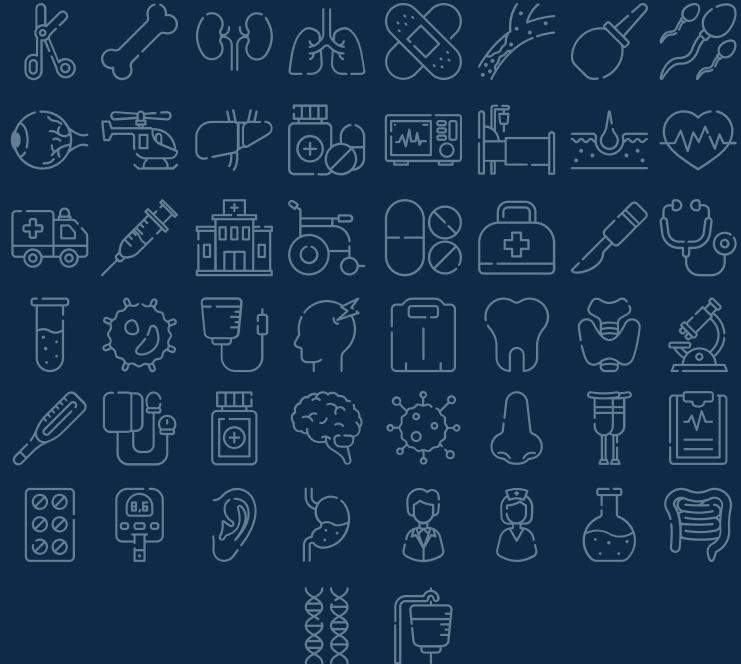
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